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U. S. Department of Health, Education, and Welfare
Public Health Service

OBSERVATIONS
ON
THE BALLSTON WATERS.

I.

Analysis of BALLSTON WATER. Communicated in a Letter to Dr. DAVID HOSACK, from ROBERT L. LIVINGSTON, Esq. during his late residence in France.

Town, September 10, 1807.

DEAR SIR,

HAVING received some benefit from the mineral waters of Ballston, of late years frequented by invalids from every part of the continent, I determined to have them analyzed, and accordingly had two dozen bottles hermetically sealed, which arrived here in a perfect state of preservation. Presuming that a knowledge of the component parts of those waters may be of public benefit, I have the honour to transmit herewith the analysis of them, by one of the most celebrated chemists; and to request that you will have the goodness to make it public.

On my arrival at Paris, I drank two bottles of the water, and found no difference, in the taste or effect, from that experienced last year at Ballston, from which I conclude that the component parts suffer little or no alteration by transportation.

Having this moment heard of a safe opportunity to New-York, I have only time to assure you of my esteem and respect.

Your most obedient servant,

ROBERT L. LIVINGSTON.

“ L'Analyse de l'eau que M. L. m'a donné à analyser, contenant par bouteille de 25 onces.

SAVOIR.

1. Acide carbonique (air fixe)	3 fois son volume.
2. Muriate de soude (sel marin)	31 grains.
3. Carbonate de chaux sursaturé	22 grains.
4. Muriate de magnésie (sel marin à base de magnésie)	12 1-2 grains.
5. Muriate de chaux (sel marin à base de chaux)	5 grains.
6. Carbonate de fer	4 grains.

“ Aucune eau minérale de notre continent n'est aussi riche en substances salines de ce genre; celle de Vichy, qui a une grande réputation, ne contient par bouteille qu'un dixième de grains de carbonate de fer tandis que celle dont nous donnons l'analyse en contient 4 grains. C'est au fer que ces espèces d'eaux acidulées doivent leur qualités toniques et désobstruantes.

“ A la dose de deux bouteilles l'eau d'Amerique doit être un léger purgatif qui convient dans tous les cas, ou il est nécessaire d'évacuer la bile, et donner du ton au système

vasculaire ; cette eau véritablement précieuse pour une infinité des maladies, semble avoir été formées par la nature, dans les meilleures proportions, pour guerir les pales couleurs, et les suppressions. On ne doute point que cette eau ne devienne un objet important de commerce."



II.

OBSERVATIONS on the use of the BALLSTON MINERAL WATERS, in various diseases ; addressed to Mr. JOHN COOK, of Albany, by DAVID HOSACK, M. D. Professor of Botany and Materia Medica, in Columbia College.

New-York, June 20th, 1810.

SIR,

To notice all the diseases in which the Ballston waters may be exhibited with advantage, and those in which they do harm, together with the circumstances which should be attended to during the use of them, would far exceed the limits of such a communication as you expect from me in compliance with your request. Nor do I possess those details which are necessary in taking a full view of the subject ; they can only be attained by a long residence at the springs, and a watchful attention to the operation of the waters in the various diseases in which they are prescribed. These particulars will probably be communicated to the public by Doctor Powel, a physician of learning and talents, who has resided several years at Ballston ; and who is possessed of much valuable information on this subject. I shall, therefore, confine myself to a few remarks which are more immediately suggested by the preceding analysis.

The Ballston waters have been long known to yield a great quantity of *fixed air*, and to hold in solution a large portion of *iron*. By the analysis referred to, it appears that they yield a much larger proportion of fixed air, and that they contain a greater quantity of iron, than any other mineral water that has hitherto been discovered, not except that of Vichy, one of the strongest chalybeate waters in Europe. But it appears that they also contain another substance, viz. the *muriate of lime*, which, with the other ingredients with which it is associated, promises to be of great and extensive utility.

We are, accordingly, from this analysis induced to ascribe more virtues to the Ballston waters than physicians have generally believed them to possess. Although much is due to exercise, change of air, and an agreeable occupation of the mind, which the amusements of watering places usually afford, I have no doubt, from the sensible effects produced upon the system by the waters themselves, that they also are productive of great good in a variety of diseases, some of which I shall now briefly enumerate.

1. From the effects of the Ballston waters, as a strong *chalybeate*, they may be employed with advantage in most diseases of debility, whether directly or indirectly such. But in those complaints which are attended with an increased excitement of the whole system, or with local inflammation, they are manifestly prejudicial. These principles are deducible from the qualities of the waters alone; but they are also confirmed by the experience and observation of physicians who have attended to their operation.

Accordingly, in *intermittent fever*, *dropsy*, *dyspepsia*; in *hypocondriasis* and *hysteria*, connected with or proceeding from debility of the digestive organs; in *paralysis*, *chronic rheumatism*, *gout* in its chronic state, *chlorosis*, *fluor busal*; in *suppression of the menses* when arising from weakness, in *worms*, and in other diseases of debility, whether of the intestinal canal, or of the whole system, the Ballston waters have been long and justly celebrated. On the other hand, in a plethoric state of the system, as in *pregnancy*, in *consumption of the lungs*, *inflammation of the liver*, *acute rheumatism*, *dysentery*, and other diseases of an *inflammatory* nature in which they are oftentimes resorted to, they invariably do injury. We may, perhaps, except from this remark, a *species of consumption* which arises in females about the time of puberty, in which, from want of energy in the system, menstruation does not take place at the period in which it usually appears; *dyspepsia* ensues, followed with general irritation of the nervous system, pain in the breast, cough, sometimes hæmorrhage from the lungs, and ultimately terminating in confirmed consumption. These consequences have frequently been prevented by a course of iron and vegetable tonics, aided by generous diet, and exercise, especially riding on horseback. Under similar circumstances, I have no doubt that the Ballston waters may be serviceable in this species of phthisis in its incipient state; but they should never be employed in diseases of this nature, without the advice of a physician.

2. From the *saline impregnation* of these waters, and their operation upon the urinary organs, as well as by perspiration, they are indicated in diseases of the *kidneys* and *bladder*, in *gout*, *chronic rheumatism*, and *eruptions* upon

the skin; all which diseases are most frequently produced by, or connected with, a morbid condition of the fluids, and an impaired state of the secretions.* In these complaints I have repeatedly prescribed these waters with the best effects.

But according to the foregoing analysis, they contain an ingredient of great value, beside those already enumerated; I mean the *muriate of lime*. It appears, upon the authority of Dr. Beddoes,† Dr. R. Pearson,‡ Dr. Wood,§ and Dr. Schraud of Vienna,|| that this substance has lately been discovered to be a remedy for *scrophula*, which hitherto has been the opprobrium of our profession. It is true, cases have been recorded by Russel and others, of the cure of this disorder by the use of sea water. But as it has been ascertained by chemists,¶ that the muriate of lime enters into the composition of sea water, it is very possible that much of the efficacy of the latter in that disease, may be derived from the muriate of lime, which it has been found to contain. But as *scrophula* is usually attended with a general debility of the system, as well as a morbid condition of the fluids, the Ballston waters will probably be found peculiarly serviceable, inasmuch as they possess the means of invigorating the system, at the same time that they contain the antidote to the peculiar virus of that disease.

* See Wilson on Dyspepsia, Gravel, &c. See also Treatise on Gravel and Gout.

† Treatise on the Consumption, Digitalis, and Scrophula.

‡ London Medical Review, vol. 3.

§ Edinburgh Medical Journal, vol. 1.

|| Treatise de Febribus.

¶ See Lavoisier, Jacquin, Thompson, and Murray.

But to obtain the benefits of the Ballston waters in any of the diseases which have been noticed, it is necessary that in the use of them, as it regards the time of taking them, the quantity taken, the stage of the disease, and other circumstances which must govern their exhibition, the directions of the physician are indispensably necessary. As well might the patient make use of any other article of the *materia medica* without medical advice, as drink these waters in the manner in which they are usually taken. It is but a short time since a very valuable life was destroyed by the imprudent use of them, during a state of pregnancy. A few days ago I was consulted by two gentleman who had left the springs much worse than they had gone to them. The one laboured under dyspepsia, attended with habitual costiveness: neglecting to relieve his bowels, he commenced the use of the waters; the consequences were, an aggravation of his disease, followed with fever, acute pain in the head, and other symptoms of general excitement. The other person referred to, had come from Virginia, on account of an obstinate chronic diarrhœa, attended with great debility, and general emaciation. Without advice, he immediately began to drink the waters to the quantity of several quarts daily. The consequences may readily be imagined; an increase of his disease, and a degree of debility from which he with difficulty recovered.

If, sir, these remarks should contain any thing deserving attention, they are at your disposal. At the same time permit me to refer you, for further information on this subject, to the *Medical Repository*, the *Medical and Philosophical*

Journal, and to the Dissertation lately published by Dr. Valentine Seaman.

I am, sir, your humble servant,

DAVID HOSACK.

Mr. JOHN COOK.

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